INTERNATIONAL BULLETIN OF PLANT PROTECTION

DISCOVERIES AND CURRENT EVENTS *

Eritrea : Desert Locust (*Schistocerca gregaria*) (1).

At the close of the 1929 invasion the discovery of miles and miles of dead desert locusts killed by attacks of *Empusa Grylli*, *Isaria* sp. and *Sarcophaga* sp. gave rise to the hope that after four years the scourge had reached its height and finished its cycle. This was a vain hope for Eritrea, although from outside the country notice came from all sides of heavy mortality among desert locusts mainly as a result of attacks by *E. Grylli* and *Sarcophaga* sp.

Occasion has arisen several times already to observe that the annual cycles of invasions in Eritrea have always been started in the late spring by swarms coming from Ethiopia and the coastal region of the Anglo-Egyptian Sudan The announcement of the opening of the 'cycle' was always the hatching of hoppers ('cucubtà') in the eastern plain. The observations gathered during 1930 confirm the already established regularity of the phases of the invasions in the Colony In fact, during February the hatching of a number of masses of hoppers was already reported along the coast of the Red Sea at Zula, Addis and Uaa ; but these, together with those hatched between May 17 and 22 at different points on the coastal zone between the Lebca and Uachiro streams, were able by the prompt action of the control gangs to be immediately destroyed by flame throwers and poison bait.

The first flying swarm was reported on 12 May near Mount Adarit. It came from the coast of the Anglo-Egyptian Sudan and was formed of young locusts (red) ; when it reached the neighbourhood of Nacfa it turned towards the middle stream of the river Anseba ; on the 22nd it was observed at Cheren, from where in the following days it flew towards the upper valley of the Barca (territory of Mansura). On the 17th and 21st of the same month the Italian Commercial Agents in Dessiè and Gondar reported very dense swarms going in a northerly direction ; on the 22nd and 31st they crossed into the territory of Seraè. The swarms were composed of young (red) locusts ; numerous gangs with flame-throwers and poison bait were promptly sent to combat them, but as might have been foreseen since the locusts were already winged, the desired results were not obtained. While the locusts were on the ground considerable quantities of them were destroyed but the main bulk of them managed to escape the flame-throwers and poison bait. This bait was found undoubtedly effective in bare, stony land where there was no other choice of food for the locusts.

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* In this, as in the two next chapters, the countries are arranged in French alphabetical order.

(1) Communication from the R. Ufficio Agrario dell'Eritrea (Servizio Fitopatologico) in Asmara, transmitted by the Colonial Government.

During June 1930 the swarms increased in number and density. Most of them came into Eritrea by way of Abyssinia from the permanent breeding grounds of Avergallè and invaded the territories of Seraè and Acchelè Guzai ; others, less in number but very dense, coming from the Anglo-Egyptian Sudan covered extensive zones of the western plain (Sabderat-Tessenei, Biscia, Agordat, Cherù, Barentù, Darotai, etc.).

All the swarms observed over the territory of the Colony (western plain and plateau) were formed to start with of sexually immature locusts ; the greater number of them had already lost the characteristic red colour and become yellow or yellowish, which is a sure sign of approaching copulation.

Careful arrangements are being made to intensify the observation of swarms in order that when they cannot be destroyed the sites chosen for breeding grounds may be noted. As has already been shown by long experience the destruction of eggs and hoppers is certainly the most effective, if not the only, method of control.

In spite of the severity of the invasion no complaints of damage worthy of note have been received.

Hellenic Republic: Crop Diseases and Pests (1).

CEREALS. From the beginning of 1930, a formidable attack due to *Cecidomyia destructor* has been declared on wheats cultivated in Thessaly and especially on the varieties ' Camberra ' and ' Condousi ', as well as on the barleys ; towards the middle of February *Chlorops taeniopus* has brought about the destruction of one tenth of the cereals. In the month of April, the Macedonian barleys suffered attacks of *Oscinis* sp.

In the month of April 1930 anxiety was felt from the extension of yellow rust of wheat (*Puccinia glumarum*) which had appeared first at the end of 1929. This proved particularly disastrous for the ' Camberra ' variety, and in consequence the crop in many parts and especially on the damper plains has almost completely failed. In the month of May the black rust (*Pucc. graminis*) completed the destruction of the crop of the other varieties which had resisted the attacks of yellow rust. The only variety which showed at least relative resistance to the attacks of the rust was the ' Condousi '. Estimating the intensity of the attack by a series of numbers up to 100, the variety ' Condousi ' may be assigned 20-25, while 90-100 would be assigned to the others, including the variety of Australian origin, the ' Camberra ' which was introduced into the Republic by the National Station for Plant Improvement at Salonica as escaping, owing to its early maturity, the consequences of rust and of drought. *Pucc. simplex* has also been found on barleys.

FRUIT TREES. Moisture and heat conditions during the spring have been very favourable to the development of cryptogamic parasites on fruit trees. Thus the young shoots of peaches and apricots at Pelion have been dried up owing to *Coryneum Beijerinckii*, while the peach and plum crop has been ruined by *Exoascus deformans*, the trees not having been treated in advance with copper mixture. In the plain of Lechonia the young shoots of cherries and almonds have been dried up by *Monilia fructigena*. The *Fusicladium* (*Venturia*) of the apple and the pear spread to an astonishing degree. On the trees treated with copper mixture before the flower buds opened, these parasites could only do trifling damage, in spite of the climatic conditions. Peach nurseries have suffered from the serious attack of *Anarsia li-*

(1) Communication from the official correspondent of the Institute, M. D. S. CAVADAS, Director of the Plant Protection Station at Pelion, Volo, Hellenic Republic.

neatella. This parasite was found for the first time in 1929 at Florina, Macedonia, on young peach trees imported from Italy.

VINE. Owing to the plentiful spring rains all the vines in certain vine growing regions have been seriously damaged by *Plasmopara viticola*. It is believed that the production of wine will be small.

MARKET GARDEN AND FORAGE CROPS. *Corynespora Melonis* and *Cladosporium cucumerinum* have destroyed nearly all the crop. In consequence of these parasites, early cucumbers have been scarce.

The crops of *Vicia Faba* var. *esculenta* as well as of *Pisum* have been seriously damaged by *Ascochyta Pisi* (*Sphaerella pinodes*). In certain localities, the crop of chick peas has almost entirely failed, as the result of a severe attack of *Phyllosticta cicerina*.

OLIVE TREES. Although the winter climatic conditions have been very favourable to this tree and a remunerative crop was expected at Pelion, after the poor crop of 1929, the yield has been greatly reduced by the olive twig moth (*Prays oleellus*) which destroyed in March the great proportion of the flower buds, and during flowering 90 per cent. of the flowers.

The olivegrowers under stress of this unexpected disaster decided to renew control of this pest by means of trap lamps which gave admirable results last year.

Hellenic Republic: Locusts (1).

This year as in the preceding years locusts made their appearance in nearly all the Departments of the Republic. The following table indicates the number of Communes of each Department in which locusts were recorded and the dates of their appearance :—

Departments	March 1930		April 1930		May 1930	Total
	1-15	16-31	1-15	16-30	1-13	
Attica and Beotia	—	1	1	6	—	8
Etolia and Acarnania	—	—	—	5	2	7
Phiotis and Phocis	1	5	20	39	—	65
Eubea	—	—	3	29	13	45
Larissa	—	—	9	23	—	32
Trikkala	—	—	2	71	32	105
Jaunina	—	—	—	4	—	4
Achaïa and Elis	1	—	19	51	5	76
Argolis and Corinth	—	—	4	20	28	52
Arcadia	2	1	1	16	—	20
Laconia	4	5	2	16	19	46
Messenia	—	—	10	25	14	49
Cyclades	4	8	2	5	—	19
Samos	—	—	1	—	—	1
Salonica	—	—	5	30	10	45
Pella	2	—	4	5	1	12
Chalcidica	—	—	9	11	—	20
Kozani	—	—	—	22	29	51
Florina	—	—	—	3	3	6
Seres	—	1	3	6	1	11
Drama	—	—	—	—	2	2
Kavalla	—	—	—	7	—	7
Canea	—	—	1	2	6	9
Candia	—	1	12	15	11	39
Lassithi	1	3	—	18	—	22
Rethymno	—	—	—	4	—	4
Total	15	25	106	433	176	757

(1) Communication from the official correspondent of the Institute, Mr. C. A. ISSAAKIDÉS, Technical Advisor of the Minister of Agriculture, Athens.

The Ministry of Agriculture has at its disposal from last year sufficient funds for locust control. During the 1929 campaign about 50 million drachmas were spent and the results were very satisfactory ; in fact the damage to crops by locusts was negligible.

This year the Ministry has completed the organisation of the control measures and the regional organisations are paying more attention than hitherto to reporting places where hatching is taking place. For this reason the appearances of locusts appear more numerous this year than last.

Experience in recent years has shown that poisoned bran bait can be used with advantage and is very effective in killing locusts at any age, even soon after hatching. This year however our Services have still used large quantities (over 200,000 15 kg. tins) of heavy oil to burn hoppers

Hellenic Republic: Means for Securing Success in the Control of the Olive Fly by the Artificial Method (1).

The question of the control of the olive fly (*Dacus oleae*) by arsenical molasses, although it has been treated at all the international and national Congresses of Olive-growing, has not yet been decided. Scientists and technicians engaged on the subject have confined themselves to summarising, on the basis of results obtained, the opposing views, without finally clearing up the question. It may however be said, with the eminent entomologist BERLESE, that the olive fly is an insect easy to control and that the artificial method by spraying with arsenical molasses does preserve the trees so treated from any attack of the fly.

It may also be said that every time satisfactory results have not been obtained from the use of dachicides of any kind, failure may be attributed to mistakes in the method of application.

Taking as basis the good results given by six consecutive applications at Pelion, and the next year, at Corfu, an attempt may be made to discuss the points which have supplied the scientists and experts with arguments for and against, and thus to clear up this confused question. Before approaching the question in detail, the following may be laid down as axiomatic:

If control of the olive fly by the artificial methods is to be successful, time should not be allowed for the Dipteron to lay its eggs, and thus to establish during its first generation a hatching centre, however small. Control will fail (except in conditions extremely favourable to success), if special prophylactic measures are not taken to check the extension of these centres and to avoid the dreaded autumnal reinvasion in the event of early rains.

Hence, in order to avoid the formation of a hatching centre during the first generation of the fly, the place and even the tree where it is to be found at this time must be known, so as to deal with it before the eggs are laid. In every olive-growing region, the life history of the fly should be ascertained in relation to the climate and to the varieties of the olive there cultivated.

It appears that as a general rule the olive fly can only attack fruits that have already reached a certain stage of maturity and probably also a certain size. This

(1) Communication from the official correspondent of the Institute, M. D. S. CAVADAS, Director of the Plant Protection Station at Pelion, Volo, Hellenic Republic.

seems to be clear, judging from the fact that the first attacks of the fly each year always occur in the same places and even on the same trees of an olive growing region.

It is well known that, in each olive-growing region, there are localities where for climatic or topographical reasons ripening is on the whole earlier than in other localities ; on the other hand in the same part of one olive plantation there may exist trees of differing varieties and varying also as regards early or late ripening of the fruit.

If then it may be taken as proved that the fly will, during its first generation, seek out these localities and in them the trees which bear the early ripening fruits and among the fruits the largest, then the expert has to know such localities and such trees before applying the artificial method, so that the spraying may be so directed as to give the most satisfactory results. From this point of view, the two following cases may be distinguished :

(1) The olive plantation is composed of olive trees of the same variety or of differing varieties, but ripening their fruit at the same time.

(2) The olive plantation is composed of olive trees of different varieties and differing also as regards date of ripening of fruit.

In the first case, the olive fly must be looked for, during its first generation, in the plantations where the fruit ripens earliest, *i. e.* plantations near the sea, on warm and damp plains, or those bordering water courses or well irrigated. In other words, when dealing with a plantation consisting of one or more varieties equally early and equally frequented by the olive fly, control should be established in those particular spots in the plantation which remain the same and are distinguished by early ripening.

Such spots, which may be called the original hatching centres, should be sprayed all at the same time from the beginning, so as not to leave the fly time to lay its eggs. For these are the places that it will seek out for the perpetuation of its kind and to act as shelter for its progeny : the centre formed will be a small one in the first instance, but from it later, when the olives of the neighbouring plantations have ripened and become large enough to act as hosts for the next generation, there will result secondary centres more or less extensive according to the summer conditions of moisture or heat.

On the other hand in the case where the plantation consists of trees of differing varieties and differing also as regards date of ripening of fruit, the first attacks of the fly should be looked for on the trees which ripen their fruit earliest, independently of the topographical locality and position of the plantation.

The terms ' dacidect ' (from *Dacus* and δείκτης = receiver) and ' dacipompos ' (from *Dacus* and πομπός = transmitter) may be employed for those early ripening varieties which are first attacked.

In reality as has just been said, the attraction which the olive has for the *Dacus* begins from the moment when the fruit acquires a certain degree of maturity and possibly also a certain size. In consequence, it is the early ripening varieties and the largest fruited varieties which are sought after by the fly for laying its eggs of the first generation, up to the moment when the other late (or partially late) varieties reach the stage of maturity and the size that enables them to act as hosts to the next generation of the fly. During that time, these early varieties play the part of ' dacidects ', as they are hosts of the fly. It would be useless to look during the first generation of the fly for worm eaten fruit on the late varieties or in the places which

are most severely attacked during the second generation or during the autumnal reinvasion, for the fly cannot attack these during its first generation. The fruits of the late varieties are attacked late in the year, however numerous may be the fly at the beginning of the summer, and only at the moment when they attain the maturity and the size which appeals to the instinct of the fly. Hence the varieties which have served as ' dacidects ' during the first generation become later ' dacipompos ' during the second and other generations.

Accordingly in Corfu during the period of the first generation of the fly, worm-eaten olives are always found on the varieties (*Olea salernitana, O. praecox, O. amygdalina, O. conica, O. macrocarpa, O. sphaerica, O. viridula, O. contorta,* etc.), which play the part of ' dacidects ' during that time ; later in September, even in the event of a severe autumnal reinvasion, these varieties are bearing healthy olives at the time when all the fruits of the late varieties, and especially *O. microcarpa, O. subrotunda* and *O. craniomorpha* have been attacked. The conclusion may therefore be drawn that the early ripening olives or the large fruits are not always those most preferred by the fly ; but they serve as a first halting place from which the attack is made later on the olives of its special choice.

Consequently, in using the artificial method of control of the olive fly by spraying with arsenical molasses, it is essential immediately and simultaneously to treat all the hatching centres determined on the basis that has just been explained, *viz.*: — (*a*) in a plantation made up of trees of the same variety or of differing varieties but of the same date of ripening, those trees which by their climatic or topographical position are actually the earliest to ripen their fruit; (*b*) in a plantation of different varieties differing also in date of ripening, then the earlier varieties, independently of the locality and of the climatic or topographical position.

If, in putting into practice the artificial method of control of the olive fly, these two rules which are based on the life history of the insect are kept well in mind, satisfactory results will always ensue. In this way it will be possible to prevent the formation during the first generation of hatching centres which although they may be quite small yet result later in an unexpected autumnal reinvasion whereby all efforts will be rendered fruitless.

Turkey: Desert Locust *(Schistocerca gregaria)* (1).

On 7 April 1930 a first flight was reported on the Turkish-Syrian frontier. On 20-21 April the locusts descended on Urfa, Mardin, Ayintap and on a part of the vilayet of Diarbekir. On 29 April flights were reported at Marash, Sirit, Hekkiari, Malatia and Elaziz. On 15 May very large flights arrived from the South and left again in the E. N. W. direction.

After pairing oviposition took place.

Some damage was reported.

On 10 May the first hatching was reported at Mardin, and on 13 May at Urfa.

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(1) Communication from the official correspondent of the Institute, Mr. SUREYA, Councillor of State at Angora.

Turkey : The Moroccan Locust (*Dociostaurus maroccanus*) in 1930 (1).

For a long time past this species has been localised in the region situated between Turkey, Iraq and Syria.

Single specimens or small numbers together are met with in the provinces on the Mediterranean coast.

In the southern provinces (such as Urfa, Mardin) breeding grounds of considerable size were marked down in 1929.

The first hatching took place beginning from 15 March 1930 in the plains and some days later on the northern slopes of the mountains ; they were found in many other quarters towards the end of the month.

Owing to the well-organised anti-locust campaign it proved possible to save the cereal crops. At the same time considerable damage was done to cereals which had not yet been harvested, by flights coming from the South at the end of the season.

The following control measures were employed :

(*a*) Spraying with a solution of Urania (1 to 1.5 % and 4 to 5 times of lime).

(*b*) Zinc barriers and ditches to stop the hoppers.

(*c*) Natural enemies : *Trichodes* sp., and especially the larvae of *Anthrax* sp. are very frequently found in the infested region. *Pastor roseus* destroys the hoppers and the adults.

VARIOUS QUESTIONS

Dusting and steeping of cereal seeds *

Australia (New South Wales) (2). — Experiments in dusting and steeping of cereals have been conducted by this Department over a period of many years.

Dr. Darnell-Smith, late Biologist of this Department, was responsible for the introduction of copper carbonate dusting method as a commercially practicable means of preventing the development of Bunt in wheat.

This method has been tested extensively in our field trials over a period of years, utilising various proportions of copper carbonate and testing against a wide variety of other dusts and solutions.

The mercury compounds are so much more expensive than the copper carbonate dusts that the use of the latter is now the standard method of treatment in this State.

For wheat which is not abnormally infected with bunt spores, *i. e.* for normal samples of wheat which are sown by farmers, a dust with the following characteristics is considered the most effective, viz., copper carbonate in which not less than 50 % of the dust is in the form of basic copper carbonates, and not less than 95 % of the dust should pass through a sieve of 100 meshes to the inch. The percentage of copper calculated as copper oxide (CuO) in such a dust should be not less than 33.1.

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* Continued from No. 9.

(1) Communication from the official correspondent of the Institute, Mr. Sureva, Councillor of State at Angora.

(2) Communication from the official correspondent of the Institute, Dr. R. J. Noble, Biologist, Biological Branch, Department of Agriculture, Agricultural Museum, Sydney, New South Wales, Australia.

The dust should be applied at two ounces to the bushel and the grain should receive a thorough and even coating of the dust prior to sowing.

Under Australian climatic conditions care has to be taken that excess dust does not clog the cogs in the cups of the machines at sowing and cause breakage of cogs, but this difficulty is readily overcome by attention to this portion of the machine at the beginning of the day's work.

India (Burma) (1). — Since the treatment of seeds with dry chemical powders entails less trouble than steeping in solutions, experiments were laid down to find the effects of 'dusting' seeds with copper carbonate, sulphur, copper sulphate (fine) and copper sulphate (crude) powders in controlling grain smut (*Sphacelotheca sorghi* Clinton) of pyaung (*Sorghum vulgare*) as compared with the standard method of steeping in 2 % copper sulphate solution. The powders of copper carbonate, sulphur and copper sulphate (fine) used in the experiments all passed through 100 mesh sieve, while the copper sulphate (crude) was composed of 37 % which passed through 100 mesh sieve, 27 % which passed through 60 mesh sieve, 21 % which passed through 30 mesh sieve and 15 % which did not pass through 30 mesh sieve. The seeds were artificially infected by mixing with grain smut spores at the rate of 1 gram of spores to 1000 grams of seed. The dusting was done by shaking the seeds with the chemical in a bottle for ten minutes; 8.16 grams of chemical was used for dusting 1800 grams of seed, or ½ tical of chemical to 1 pyi of seed (pyi = measure of volume, about $^9/_{16}$ gallon), the seeds were sown in rows in plots 20 × 20 feet arranged in a Latin square, each treatment being replicated six times. Another experiment on a much smaller scale was put down, in which the seeds were sown in single rows, each treatment being replicated six times in the case of sanpyaung (a variety of sorghum with prominent grains) and eight times in the case of kunpyaung (a variety of sorghum with closely adherent glumes). The crop was badly attacked by the pyaung seed fly so that about 58 % of the ears of sanpyaung and 27 % of kunpyaung were totally grainless, while a large number had only a few sound grains on them. However, the results were sufficient to indicate that copper carbonate, copper sulphate (fine) and sulphur dusts were almost as efficient as copper sulphate solution. Kunpyaung was less amenable to treatment than sanpyaung.

Amongst the chemicals used sulphur treatment is the most economical.

India (Bombay Presidency) (2). — In our experiments on the control of grain smut (*Sphacelotheca sorghi*) of jowar (*Andropogon sorghum*) very good results have been obtained by dusting jowar seed with dry powdered sulphur which can pass through a sieve having 200 meshes to a square inch. This method has definitely replaced the steeping of jowar seed with a two per cent solution of copper sulphate.

Union of South Africa (3). — Some recent tests have been carried out in connection with the disinfection of wheat and peanut seeds. Unfortunately we have at present very little information with regard to the comparative merits of the dusting and steeping methods, but it is proposed to carry out further tests in

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(1) Communication from the official correspondent of the Institute, Mr. D. Rhind, I. A. S., Economic Botanist, Mandalay, Burma.

(2) Communication from the official correspondent of the Institute, Dr. B. N. Uppal, Plant Pathologist to Government, Bombay Presidency, College of Agriculture, Poona, India.

(3) Communication from the official correspondent of the Institute, Dr. E. M. Doidge, Principal Plant Pathologist, Division of Plant Industry, Plant Pathological Section, Department of Agriculture, Pretoria, Union of South Africa.

the near future and also to investigate the possibility of the introduction of mercury into plant and fruits through the use of mercury compounds such as Tillantin, Uspulun and Semesan. ZIMMERMAN indicates that mercury may be found in the grain of plants grown from seed treated with mercury compounds.

Formalin. — Germination tests carried out (Aug.-Sept. 1928) with Rieti wheat treated with different strengths of formalin, gave the following results :—

A. Artificial conditions : (Selected seed, 200 each test).

(1) Steeping method

Formalin	1	pt.	to	25	gals.	water.	Av. germ.	90 %
»	1	»	»	30	»	»	»	89 %
»	1	»	»	40	»	»	»	91 %
Control							»	93 %

(2) Sprinkling method

Formalin	1	pt.	to	30	gals.	water.	Av. germ.	97 %
»	1	»	»	40	»	»	»	90 %
Control							»	94 %

B. Field conditions (seed not selected : ½ lb. each test).

The germination of all formalin-treated seed with the exception of half the 1 in 40 treatment, which was exceptionally good, was noticeably inferior to the controls. The 1 in 30 treated seed was only slightly inferior to 1 in 40 seed, but there was a marked difference between the greater part of the 1 in 24 and the others. No actual percentages were taken owing to the quantity of seed used.

From the above it will be seen that where wheat seed was selected and grown under artificial conditions of heat and moisture, there was no appreciable difference in the germination of seed treated with formalin 1 in 25,1 in 30 and 1 in 40 as compared with other and with controls. Under natural field conditions however, where seed was unselected and used in larger quantities, germination varied in inferiority according to the strength of formalin used, confirming results obtained elsewhere.

Tillantin and Uspulun. — Peanut seed known to be infected with mould spores and treated with Tillantin showed an increase in germination of 30 % to 50 % over untreated seed.

Similar seed treated with Uspulun showed an increase of 66 % over untreated seed.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Germany. — By Order of 5 July, 1930 relating to the charges for the inspection of rooted plants, potatoes and fruit at the time of importation, which came into force on 15 July, 1930, the following prescriptions are made under § 2 of the Order of 7 April, 1887 (*Reichsgesetzbl.*, S. 155) relating to the importation of rooted plants from the States not taking part in the International Phylloxera Convention and also under § 2 of the 'Vereinzollgesetz' of 1 July, 1869 (*Bundesgesetzbl.*, S. 317) :—

Article I. — §§ 4 and 5 of the enactment of 23 August, 1887 (*Reichsgesetzbl.*, S. 431), relating to the importation of rooted plants from the States not taking part in the International Phylloxera Convention in the sense of the enactment of 8 October, 1924 (*Reichsministerialbl.*, S. 340) read as follows :—

' § 4. The charge for the inspection of rooted plants is for each kilogramme of net weight a flat rate of 0.01 RM. but for each consignment at least 1 RM.

The right is reserved to the authorities, in cases in which the inspection involves special outlay, to collect a separate charge to cover additional costs.

The highest authorities have the further right to lower the charges proportionately in the case of transit over a short distance.

§ 5. At the time of consignee taking delivery, the dues will be collected by the authorities before whom the inspection took place and will be passed to places to be determined by the supreme authorities. The consignee bears all responsibility for the unlading and relading of consignments for purposes of inspection, assistance in such operations, as well as for the opening and closing up of the consignments.

The supreme authorities fix the honorarium of the experts '.

Article II. — Sentence 2 of § 2 of the Order of 7 March, 1930 (*Reichsgesetzbl.*, I, S. 34) on prevention of the introduction of potato wart disease [*Synchytrium endobioticum*] reads as follows :—

' The experts to whom the work of inspection is entrusted are appointed by the State Governments. The provisions of §§ 1, 2, 4 and 5 of the enactment of 23 August, 1887 (*Reichsgesetzbl.*, S. 431), relating to the import of rooted plants from the States not taking part in the International Phylloxera Convention, correspond in sense to article I with the proviso that for the inspection a flat rate of 0.001 RM. per kg. of net weight will be charged, and not less than 1 RM. for each consignment '.

Article III.—The sentence 2 of § 2 of the Order of 27 April, 1929 (*Reichsgesetzbl.*, I, S, 92) on prevention of the introduction of the cherry fruit fly [*Rhagoletis cerasi*] reads as follows :—

' Experts to whom the work of inspection is entrusted are appointed by the State Governments. The provisions of §§ 1, 2, 4 and 5 of the enactment of 23 August 1887 (*Reichsgesetzbl.*, S. 431) relating to the import of rooted plants from the States not taking part in the International Phylloxera Convention correspond in sense to article I with the proviso that a flat rate of 0.003 RM. will be collected for each kg. of net weight, and at least 1 RM for each consignment '.

Article IV. — § 1 of the Order of 5 February, 1898 (*Reichsgesetzbl.*, S. 5) relating to the import of living plants and fresh fruit from America, and § 1 of the Order of 6 August, 1900 (*Reichsgesetzbl.*, S. 791), relating to limitations of importation on account of the risk of bringing in the San José scale [*Aspidiotus perniciosus*] contain the following fourth sentence :—

' The experts to whom the work of inspection is entrusted are appointed by the State Governments. The provisions of §§ 1, 2, 4 and 5 of the enactment of 23 August, 1887 (*Reichsgesetzbl.*, S. 431), relating to the import of rooted plants from the States not taking part in the International Phylloxera Convention, correspond in sense to article I with the proviso that for inspection of consignments of apples per case up to 35 kg. the charge is 0.05 RM, per case over 35 kg. 0.10 RM., for the inspection of other types of fruit consignments per each kg. of net weight a flat rate of 0.003 RM., in each case however at last 1 RM. will be charged for each consignment '. (*Reichsgesetzblatt*, Berlin, 12. Juli 1930, Teil I, Nr. 24, S. 203-204).

*** In accordance with an Order of 7 July, 1930 for the prevention of the introduction of diseases and pests of flower bulbs and tubers, the following prescriptions are made on the basis of § 2 of the ' Vereinszollgesetz ' of 1 July, 1869 (*Bundesgesetzbl.*, S. 317) :—

§ 1. The importation is prohibited till further notice of flower bulbs and tubers attacked or suspected of being attacked by the yellow bacterial disease of hya-

cinths (' Gelber Hyazinthenrotz ', ' Gelbkrankheit', *Pseudomonas Hyacinthi*), *Sclerotinia bulborum* (' Schwarzer Rotz '), grey bulb rot (' Sklerotienkrankheit', *Sclerotium Tuliparum*), fire or blight of tulips (' Botrytiskrankheit ', *Botrytis* [*parasitica*] *Tulipae*), *Penicillium* sp. (' Ringelkrankheit '), *Tylenchus* [*hyacinthi*] *dipsaci* (' Nematodenkrankheit '), the Narcissus flies (' Narzissenfliege ', *Merodon* sp., *Eumerus* sp.), or *Rhizoglyphus echinops* (' Wurzelmilbe ').

§ 2. The importation of flower bulbs and tubers is till further notice permitted only if each consignment is accompanied by a certificate in German given by a plant protection officer of the country of origin, in which it is certified that the consignment has been inspected by himself and has been found to be free of the diseases or pests enumerated in § 1.

§ 3. The transit through Germany of flower bulbs and tubers under customs supervision is permitted. (*Reichsgesetzblatt*, Berlin, 12. Juli 1930, Teil I, Nr. 24, S. 204-205).

Spain. — The ' Real orden ' No. 259 of 28 June 1930 provides as follows :—

(1) The following species of plants :— *Araucaria excelsa, A. imbricata, Kentia Forsteriana, K. Belmoreana, Cocos Weddelliana, Dracaena Pareyi, D. Bruantii*, Azaleas, *Rhododendron* and *Laurus nobilis* (trimmed to a geometrical shape and exceeding 125 cm. in height) coming from Belgium shall not be allowed to be imported into Spain unless their roots are covered by the thinnest possible layer of soil.

(2) The papers required by the Customs for the consignment and withdrawal of such plants must be accompanied by a certificate issued by the Belgian Phytopathological Service conforming to the model annexed to the " Real orden " and bearing all the required information. [This model conforms to the model annexed to the International Convention for Plant Protection (Rome, 16 April, 1929). (See this *Bulletin*, Year III, 1929, No. 4, p. 55)].

(3) Plants specified in § 1 must be presented at the Spanish frontier in wooden cases perfectly closed and officially sealed by the Belgian Phytopathological Service. The cases must bear on the outside indications of the species contained which may be only one of those enumerated in § 1.

(4) Consignments of the plants to which this concession applies may be addressed only to one of the following destinations :— Madrid, Barcelona, Valencia, Sevilla, Bilbao and La Coruña.

(5) On the arrival at any frontier or customs office of consignments of plants with soil the consignee shall present a duplicate of the request for inspection by the Spanish Phytopathological Service at the destination, this duplicate being signed by an expert of the above-mentioned Service.

The official of the Spanish Phytopathological Service responsible for the inspection of plant products at the Customs House or frontier of arrival shall notify the arrival Customs House that the consignment may be claimed without inspection ; before the removal of the consignment, however, each package containing plants with soil must be sealed by the Phytopathological Service of the arrival Customs Office and these seals must arrive intact at one of the destinations specified in § 4, where the packages with the seals of the Phytopathological Service intact will be inspected by the Phytopathological Service. The goods may be removed by the consignee and freely circulated only after they have been certified as healthy by the Phytopathological Service.

(6) Should the presence of a disease readily transmissible to crops be found in a consignment of plants with soil the official responsible for the phytopathological

inspection shall order the consignment to be burnt in his presence and shall immediately notify the Ministry of National Economy which will promptly suspend the admission of the plants with soil specified in § 1.

(7) If it is found in practice not to be possible to consign all other garden plants from Belgium with roots freed from soil and washed, the Ministry of National Economy will investigate the practicability of including the genus or species of plants in question among those enumerated in § 1 whenever it is not possible to wash the roots and transplant in Spain so as to replace the original soil. (*Gaceta de Madrid*, Madrid, 4 julio 1930, año CCLXIX, tomo III, núm. 185, págs. 133 y 134).

Italy. — By Ministerial Decree of 25 August 1930 the commune of Porto San Giorgio in the province of Ascoli Piceno has been declared infected with grape phylloxera. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 29 agosto 1930, anno 71°, n. 202, p. 3412).

*** By Royal Decree No. 1383 of 28 August 1930 full and entire ratification has been given to the International Convention for Plant Protection signed at Rome on 16 April, 1929 (cf. this *Bulletin*, 1929, No. 4, pp. 50-55). This Decree will come into force at the date and in the conditions specified in Art. 23 of the Convention. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 27 ottobre 1930, anno 71°, n. 252, pp. 4538-4544).

*** The regulations controlling the exportation of chestnuts to the United States of America during the 1930-31 season are given in a Circular of 1 September 1930.

It is forbidden to introduce into the ports and frontier stations consignments of chestnuts for the United States of America which are not accompanied by a certificate of disinfection.

Persons intending to export chestnuts to the United States of America must give notice at least 20 days before the despatch of the goods to one of the following Institutions :—

a) R. Osservatorio di Fitopatologia, presso il R. Istituto Superiore Agrario di Portici, for Southern Italy ;

b) R. Stazione di Patologia vegetale di Roma, for Central Italy ;

c) R. Osservatorio di Fitopatologia, presso il Laboratorio sperimentale di Fitopatologia di Torino, for Northern Italy.

These Institutions alone are authorised to issue the certificate of disinfection which must accompany consignments of chestnuts for the United States of America.

The issue of such certificates is governed by the following principal conditions :

(*a*) chestnuts intended for exportation to the United States of America must before all be carefully sorted to eliminate any showing signs of deterioration due to any cause whatever ;

(*b*) the chestnuts after such sorting must be disinfected by the hot water method or with carbon bisulphide under the control of the Institutions specified above ; the Directors of these Institutions may however allow the use of other methods which will ensure disinfection without damaging the commercial value of the goods ;

(*c*) chestnuts after the prescribed treatment must undergo a further sorting and be stored completely separate from any fresh arrivals of chestnuts ;

(*d*) packages used for consignment must be such as to allow of adequate aeration (1)

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